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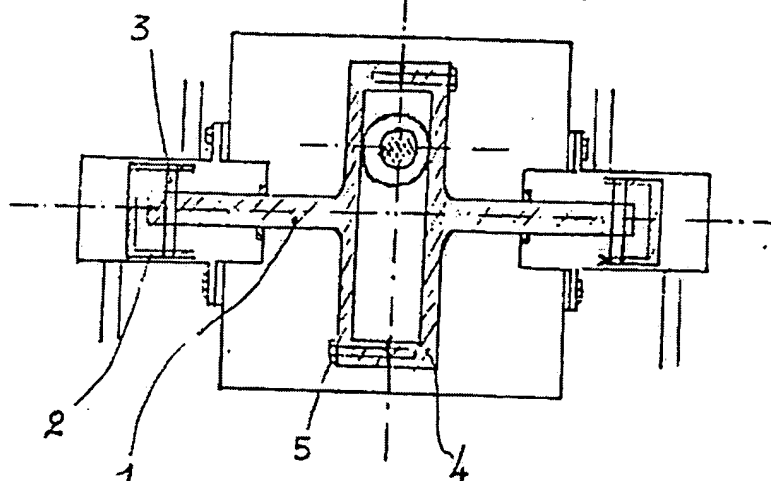
G4296C/30 ★ FR 2438-746

Two/stroke two cylinder, horizontally opposed engine - uses Scotch yoke to convert reciprocating motion of pistons to rotation of crank shaft

MARANDEAU A 10.10.78-FR-028823

(13.06.80) F01b-09 F02b-75/24

The two-stroke, two cylinder, horizontally opposed engine has connecting rods (1) rigidly attached to the pistons (2)



a pin (3). The other ends of the connecting rods are joined to form a Scotch yoke (4).

The Scotch yoke has a transverse slot which forms a guide for a sliding bush, which receives the crank-

pin of the crankshaft. The Scotch yoke eliminates the gudgeon pin bearings. 10.10.78 as 028823. (4pp1099).

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DEMANDE  
DE BREVET D'INVENTION

(21)

N° 78 28823

(54) Moteur à cylindres opposés et bielles fixes.

(51) Classification internationale. (Int. Cl 3) F 02 B 75/24; F 01 B 9/00; F 02 B 75/32.

(22) Date de dépôt ..... 10 octobre 1978.

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(41) Date de la mise à la disposition du  
public de la demande ..... B.O.P.I. — «Listes» n. 19 du 9-5-1980.

(71) Déposant : MARANDEAU André, résidant en France.

(72) Invention de :

(73) Titulaire : *Idem* (71)

(74) Mandataire :

## DESCRIPTION

La présente invention concerne tous les moteurs a pistons, dont le mouvement rectiligne alternatif doit être transformé en mouvement circulaire.

Dans les moteurs connus de nos jours le mouvement alternatif est transformé en mouvement circulaire, au moyen de bielles articulées d'une part au piston, 5 d'autre part sur le vilebrequin. Ce procédé présente de nombreux inconvénients ; il est coûteux , fragile, et provoque de nombreuses vibrations.

Le dispositif suivant l'invention permet d'éviter ces inconvénients. Dans celui-ci en effet, il est possible de transformer le mouvement alternatif en mouvement circulaire sans que les bielles soient animées d'aucun mouvement 10 d'oscillation ce qui supprime toutes vibrations et permet de remplacer le vilebrequin par un plateau manivelle. Le dessin annexé illustre a titre d'exemple un mode de réalisation du dispositif conforme à la présente invention.

Telle qu'elle est représentée, la présente invention concernant un moteur deux temps comporte deux bielles 1 rendues solidaires des pistons au moyen d'un 15 axe 3 et entre elles par une cage 4 l'ensemble peut être réamisé d'une seule pièce ou de deux pièces différentes; pour cela il suffira de les relier entre elles par des vis, ou boulons 5.

Dans cette cage viendra se mouvoir le maneton 6 du plateau manivelle 7 relié au volant moteur 8 par son arbre 9 maintenu dans un carter 10. La liaison entre 20 le maneton 6 et la cage 4 est assurée par l'intermédiaire d'un roulement ou d'un coussinet 11 qui coulisse dans ladite cage."

L'étanchéité des fonds de culindres 12 est assurée par des joints 13.

Ce dispositif, objet de l'invention, peut être utilisé dans tous les cas, ou l'on aura a transformer le mouvement alternatif de deux pistons de cylindres 25 opposés en mouvement circulaire a un plateau manivelle ou vilebrequin.

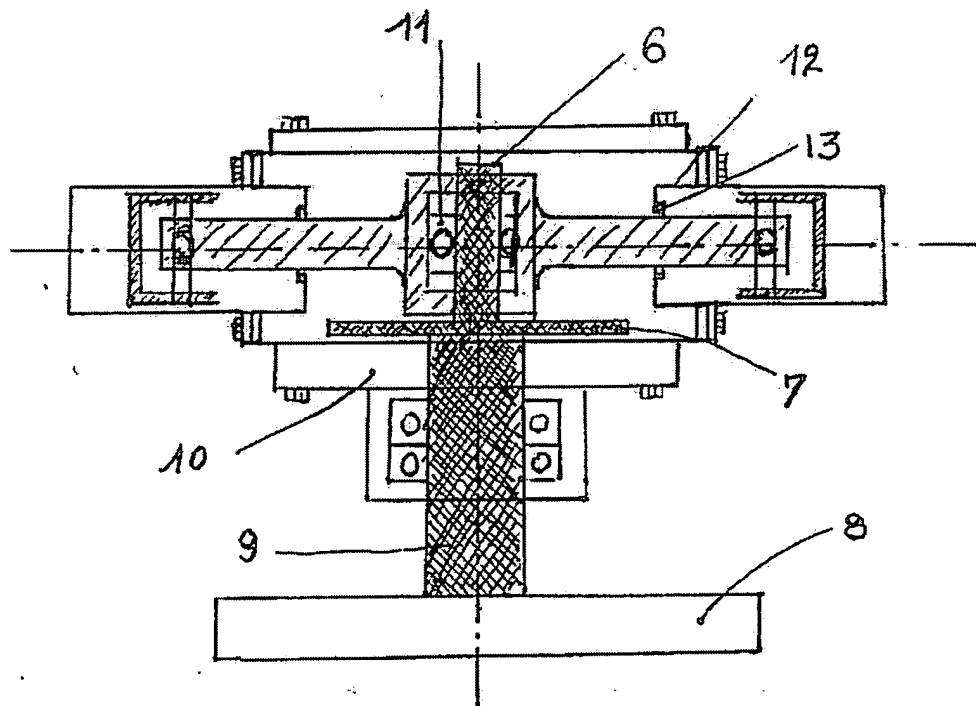
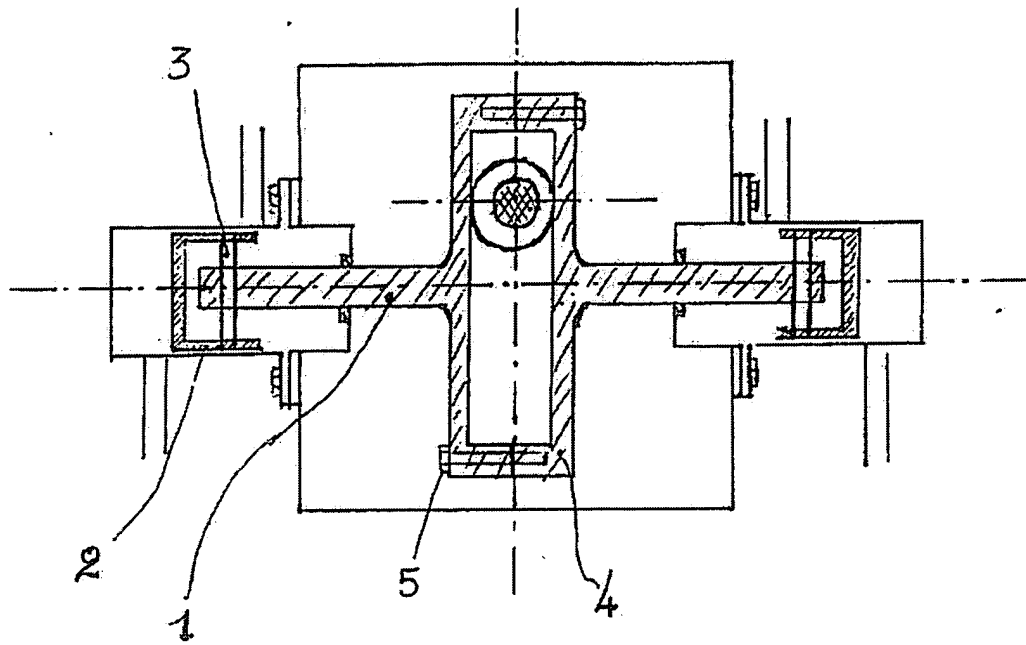
REVENDECATIONS

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Dispositif permettant de transformer le mouvement alternatif du piston en mouvement circulaire au plateau manivelle ou vilebrequin .

Caractérisé par le fait que les deux bielles sont rendues fixes entre elles.

- 5 1°) Par une cage, animées d'un mouvement de va et vient qui transforme ce mouvement en circulaire au plateau manivelle par l'intermédiaire d'un manchon.
- 2°) Reliées a chaque piston par un moyen quelconque (axe, filetage, ou autre procédé).
- 3°) Que ces bielles seront usinées dans le cas d'un moteur deux temps afin  
10 d'assurer au moyen d'un point d'étanchéité a la partie inférieure de chaque cylindre.
- 4°) Que ce dispositif peut également s'employer dans un moteur a quatre temps.



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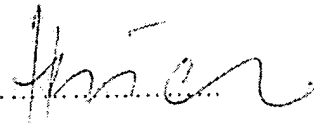
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for a Patent made in: **France**

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APPLICATION  
FOR PATENT OF INVENTION

[21] No. 78 28823

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[54] Engine with opposed cylinders and fixed connecting rods

[51] International Classification (Int. Cl.<sup>3</sup>) F 02 B 75/24;  
F 01 B 9/00; F 02 B 75/32

[22] Filing date: 10 October 1978

[33][32][31] Priority claimed:

[41] Date of making the application available to the public:  
Off. Bulletin "Lists" No.19 of 9-5-1980

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[71] Applicant: MARANDEAU, Andre, resident in France

[72] Invention of:

[73] Proprietor: *Idem* [71]

[74] Representative:

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## DESCRIPTION

The present invention relates to all piston engines the rectilinear reciprocating movement of which must be transformed into a circular movement.

5 In the engines known today the reciprocating movement is transformed into a circular movement by means of connecting rods [that are] articulated on the one hand at the piston and on the other hand at the crankshaft. This procedure entails numerous disadvantages: it is costly, fragile, and causes a  
10 lot of vibrations.

The device according to the invention allows these disadvantages to be avoided. With it, it is actually possible to transform the reciprocating movement into a circular movement without the connecting rods being animated by any  
15 oscillating movement, which suppresses all vibrations and allows the crankshaft to be replaced by a crank plate. The attached drawing illustrates, by way of an example, an embodiment of the device according to the present invention. As shown here, the present invention relating to a two-stroke  
20 engine comprises two connecting rods 1 integrated with the pistons by means of an axle 3, and among themselves by a cage 4. The whole assembly may be built in one piece or in two different pieces; to that end it is sufficient to link them among themselves by screws or bolts 5.

25 In this cage there will move the crank pin 6 of the crank plate 7 linked to the engine 8 by its axle 9 held in a casing 10. The link between the crank pin 6 and the cage 4 is ensured by the intermediary of a ball bearing or plain bearing 11 that slides within the said cage.

30 Imperviousness of the bottoms of the cylinders 12 is ensured by the seals 13.

This device according to the invention may be utilised in all cases where one has to transform the reciprocating movement of two pistons of opposed cylinders into a circular movement of a  
35 crank plate or crankshaft.



## CLAIMS

Device allowing the reciprocating movement of the piston to be transformed into a circular movement of the crank plate or crankshaft, characterised in that the two connecting rods are  
5 fixedly linked to each other

- 1.) By a cage, being animated by a to-and-fro movement and which [cage] transforms this movement into a rotation of the crank plate by means of a crank pin.
- 2.) Linked by whatever means (axle, threaded connection  
10 or other procedure) to each piston.
- 3.) That these connecting rods are [so] machined, in the case of a two-stroke engine, as to provide a sealing point for the lower part of each cylinder.
- 4.) That this device may equally be utilised in a four-  
15 stroke engine.

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